Note that all the claims currently pending in this application, including those not presently being amended, have been reproduced below for the Examiner's convenience.

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1. (Amended) A simulator apparatus with which an operator plays a simulation with virtual object(s) in mixed reality space including a virtual space and real space, said simulator comprising:

viewpoint detection means for detecting the location/posture of a viewpoint of the operator;

geometric information acquisition means for acquiring geometric information of real object(s);

recognition means for recognizing a current relative relationship between the virtual object(s) and real object(s);

a rule memory for storing rules for controlling the action of the virtual object(s);

computation means for determining the next action of the virtual object(s) in accordance with the rules stored in said rule memory and in correspondence with the location/posture of the real object(s), and computing the location/posture of the virtual object(s) after the determined action; and

presentation means for generating at least one image of the virtual object(s) on the basis of the location/posture of the virtual object(s) after the determined action and the location/posture of the viewpoint position of the operator, and for representing the mixed reality space to the operator by superimposing the image(s) of the virtual object(s) on the operator's view of the real space.

Sub B2 2. (Amended) The apparatus according to claim 1, wherein said presentation means further comprises:

image-capturing means for capturing real space images of said operator's view of real space images of said player's view of the real space;

image generation means for generating mixed reality images representing the mixed reality space by superimposing or overlaying said image(s) of the virtual object(s) on said real space images; and

a video see-through type display means that the operator wears wherein said mixed reality images are displayed.

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3. (Amended) The apparatus according to claim 1, wherein said presentation means further comprises an optical see-through type display means that the operator wears wherein said virtual object image(s) are displayed.

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4. (Amended) The apparatus according to claim 1, further comprising,

status detecting means for detecting status of the operator;

wherein said computation means determines a next action of the virtual object in accordance with the rule stored in said rule memory and in correspondence with the location/posture of the real object and/or the status of the operator, and computing a location/posture of the virtual object after the determined action.

5. (Amended) The apparatus according to claim 1, wherein the current relative relationship includes a layout relationship between the virtual object and real object at the current time in the mixed reality space.

6. (Amended) The apparatus according to claim 1, wherein the current relative relationship includes a behavior of the real object with respect to the virtual object at the current time in the mixed reality space.

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7. (Amended) The apparatus according to claim 1, wherein the real object includes the operator himself or herself, and said recognition means recognizes a current relative relationship between the virtual object and the operator.

Sub C2

8. (Amended) The apparatus according o claim 1, wherein the real object includes a plurality of operators who operate said simulator apparatus, and the plurality of operators share a single mixed reality space.

Sub B4

9. (Amended) The apparatus according to claim 1, wherein the real object is an object which is fixed in position, and

said geometric information acquisition means comprises:

a predetermined memory for pre-storing location information and shape information of the real object; and

means for reading out the location information and shape information of the real object from said predetermined memory as needed.

10. (Unamended) The apparatus according to claim 1, wherein the real object is an object which is movable but does not deform, and

said geometric information acquisition means comprises:

a predetermined memory for pre-storing shape information of the real object;

a location/posture sensor for detecting a location/posture of the real object; and

means for setting a region the real object is expected to occupy in the mixed real space in accordance with the detected location/posture of the real object.

11. (Amended) The apparatus according to claim 1, wherein the real object is an operator, and

said geometric information acquisition means comprises:

a sensor for detecting a location/posture of a head of the operator; and

means for setting a region having a fixed, known shape that approximates the operator in the mixed reality space in accordance with the detected location/posture of the operator's head.

12. (Amended) The apparatus according to claim 1,wherein when the simulation is a battle simulation with the virtual object, an objective is to decrease an expected score of the operator.

13. (Amended) The apparatus according to claim 1, wherein when the simulation is a cooperative simulation with the virtual object, an objective is to increase an expected score of the simulation.

14. (Amended) The apparatus according to claim 1, wherein one of the rules stored in said rule memory controls the action of the virtual object on the basis of an objective of the simulation and a relative relationship between the virtual object and real object.

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15. (Amended) The apparatus according to claim 1, wherein one of the rules stored in said rule memory expresses the action of the virtual object as an action pattern with a predetermined aim for achieving an objective of the simulation.

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16. (Amended) The apparatus according to claim 15, wherein the pattern has a path disadvantageous to the operator in consideration of a layout relationship between the virtual object and real object.

Sub B5

17. (Amended) The apparatus according to claim 11, wherein when the operator is one of the real objects, an output from said viewpoint detection means for detecting the location/posture of the viewpoint of the operator is also used as information which is to be acquired by said geometric information acquisition means and pertains to a location and shape of the operator.

18. (Amended) The apparatus according to claim 1, wherein said viewpoint detection means detects a location/posture of the head of the operator, and

said apparatus further comprises detection means for detecting a location/posture of a hand of the operator; and

means for recognizing a relative location of the hand of the operator with respect to the head as a command on the basis of an output from said detection means.

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19. (Unamended) The apparatus according to claim 1, wherein said presentation means comprises:

means for aligning the location/posture of the real object to the location/posture of the virtual object after movement;

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means for generating an image of the virtual object after alignment in correspondence with an occlusion relationship; and

a head-mounted display device.

20. (Amended) An image processing method for a simulator apparatus with which an operator plays a game with virtual object(s) in a mixed reality space comprising:

viewpoint detection step for detecting the location/posture of a viewpoint of the operator;

geometric information acquisition step for acquiring geometric information of real object(s);

recognition step for recognizing a current relative relationship between the virtual object(s) and real object(s);

computation step for determining the next action of the virtual object(s) in accordance with the rules stored in a rule memory, which stores rules for controlling the action of the virtual object(s), and in correspondence with the location/posture of the real object(s), and computing the location/posture of the virtual object(s) after the determined action; and

presentation step for generating at least one image of the virtual object(s) on the basis of the location/posture of the virtual object(s) after the determined action and the location/posture of the viewpoint position of the operator, and for representing the mixed reality space to the operator by superimposing the image(s) of virtual object(s) on the operator's view of the real space.

21. (Amended) The method according to claim 20, wherein the operator wears a video see-through type display, and said presentation step further comprising,

image-capturing step for capturing real space images of said operator's view of the real space;

image generation step for generating mixed reality images representing of the mixed reality space by superimposing or overlaying said image(s) of virtual object(s) on said real space images and for displaying said mixed reality images on the display.

22. (Amended) The method according claim 20, wherein the operator wears an optical see-through type display and said presentation step representing the mixed reality space to the operator by displaying the image(s) of virtual object(s) on the display.

23. (Amended) The method according to claim 20, further comprising,

status detecting step for detecting status of the operator;

wherein said computation step determines a next action of the virtual object in accordance with the rule stored in said rule memory and in correspondence with the location/posture of the real object and/or the status of the operator, and computing a location/posture of the virtual object after the determined action.

24. (Amended) The method according to claim 20, wherein the recognition step recognizes the current relative relationship including a layout relationship between the virtual object and real object at the current time in the mixed reality space.

25. (Amended) The method according to claim 20, wherein the recognition step recognizes the current relative relationship including a behavior of the real object with respect to the virtual object at the current time in the mixed reality space.

26. (Amended) The method according to claim 20, wherein the recognition step includes the step of recognizing a current relative relationship between the virtual object and the operator, and the real object includes the operator himself or herself.

27. (Amended) The method according to claim 20, wherein a plurality of operators share a single mixed reality space and the real object(s) used in the computation step includes a plurality of operators who operate the apparatus.

28. (Amended) The method according to claim 20, wherein the real object is an object which is fixed in position, and

the geometric information acquisition step includes the steps of:

pre-storing location information and shape information of the real object in a predetermined memory; and

reading out the location information and shape information of the real object from the predetermined memory as needed.

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29. (Unamended) The method according to claim 20, wherein the real object is an object which is movable but does not deform, and

the geometric information acquisition step includes the steps of:

pre-storing shape information of the real object in a predetermined memory;

detecting a location/posture of the real object by a location/posture sensor; and

setting a region the real object is expected to occupy in the mixed real space in accordance wit h the detected location/posture of the real object.

30. (Amended) The method according to claim 20, wherein the real object is an operator, and

the geometric information acquisition step includes the steps of:

detecting a location/posture of the head of the operator; and

setting a region having a fixed, known shape that approximates the operator in the mixed reality space in accordance with the detected location/posture of the head.

31. (Amended) The method according to claim 20, wherein when the simulation is a battle simulation with the virtual object, an objective used in said computation step is to decrease an expected score of the operator.

32. (Amended) The method according to claim 20, wherein when the simulation is a cooperative simulation with the virtual object, an objective used in said computation step is to increase an expected score of the operator.

33. (Amended) The method according to claim 20, wherein one of the rules controls the action of the virtual object on the basis of an objective of the simulation and a relative relationship between the virtual object and real object.

34. (Amended) The method according to claim 20, wherein one of the rules stored in the rule memory expresses the action of the virtual object as an action pattern with a predetermined aim for achieving the objective of the simulation.

35. (Amended) The method according to claim 34, wherein said computation step determines an action using a pattern having a path disadvantageous to the operator in consideration of a layout relationship between the virtual object and real object.

36. (Amended) The method according to claim 30, wherein when the operator is one of real objects, said geometric information acquisition step uses an output from said viewpoint detection step of detecting the location/posture of the viewpoint of the operator that pertains to a location and shape of the operator.

37. (Amended) The method according to claim 20, wherein the viewpoint detection step includes the step of detecting a location/posture of the head of the operator , and

said method further comprises the detection step of detecting a location/posture of a hand of the operator; and

the step of recognizing a relative location of the hand of the operator with respect to the head as a command on the basis of an output in the detection step.

38. (Unamended) The method according to claim 20, wherein the presentation step includes the steps of:

aligning the location/posture of the real object to the location/posture of the virtual object after movement; and

generating an image of the virtual object after alignment in correspondence with an occlusion relationship.

39. (Amended) A storage medium which stores a program of an image processing method for a simulator apparatus with which an operator plays a simulation